Technical Workshop on Estuarine Habitat in the Bay Delta Estuary

Managing the Low Salinity Zone to Protect Estuarine Habitat and Aquatic Life

27 March 2012
9:00 am – 4:30 pm
(please arrive by 8:30)
Cal/EPA Coastal Room, 2nd Floor
1001 "I" Street, Sacramento 95814

Purposes of the Workshop

❖ Increase our collective understanding about the attributes of estuarine habitat, and the tools we have for protecting it.

❖ Characterize the response of biological indicators and ecological processes to changing locations of the low salinity zone (LSZ).

❖ Generate scientific information that EPA and others can translate into recommendations that support the State's Comprehensive Review of the 2006 Water Quality Control Plan (WQCP) for the Bay Delta Estuary.

Workgroup Questions[1]

1. What are the key points of scientific agreement, disagreement, and uncertainty surrounding estuarine habitat and aquatic life in the Bay Delta Estuary? How can scientists and agencies "manage the uncertainty" while advancing the protection of estuarine habitat and aquatic life?

2. What is needed to update and improve the State's current approach of protecting estuarine habitat with a springtime salinity standard (FEB-JUN)? Which scientific discoveries and modeling techniques emerging since 1995 should be applied toward managing the LSZ?

3. (a) What are the drivers in the quantity of estuarine habitat during each season of the year?
   (b) What are the drivers in the quality of estuarine habitat during each season of the year?
   (c) What biological indicators respond to changing locations of the LSZ east of the Carquinez Strait?
   Please record your ideas on the attached chart of biological indicators and metrics.

4. Given the historical and present-day relationships between the LSZ and the landscape of the Bay Delta, how can models be used to forecast the response of selected biological indicators to changing precipitation patterns, rising sea levels, and restoration scenarios?

[1] Tim Vendlinski drafted these questions with excellent input and suggestions from Brock Bernstein, Erin Foresman, Robin Grossinger, Bruce Herbold, Michael MacWilliams, B.J. Miller, Stephen Monismith, and Karen Schwinn.

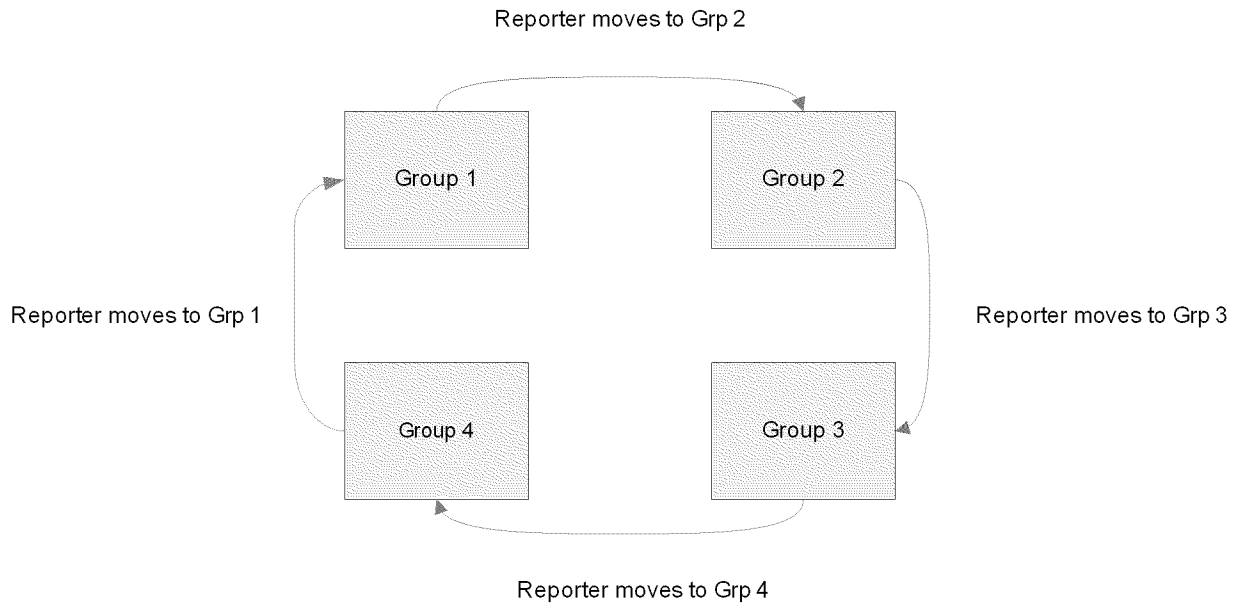
Agenda

8:30 – 9:00	Arrive; get settled; enjoy bagels, coffee, and juice	
9:00 – 9:10	Welcome and introductions	Karen Schwinn (EPA)
9:10 – 9:20	Agenda overview	Brock Bernstein
9:20 –9:45	Historical Perspectives on the Estuarine Gradient	Robin Grossinger Aquatic Science Center
9:45 –10:10	Modeling Estuarine Processes using SUNTANS	Stephen Monismith Stanford University
10:10 –10:35	Modeling Estuarine Processes using UnTRIM	Michael MacWilliams Delta Modeling Assoc.
10:35–10:40	Reflections on presentations and transition to workgroups	Brock Bernstein
10:40 – 10:50	Workgroup instructions and assignments	Brock Bernstein
10:50 – 12:15	First workgroup session – Prepare first draft of discussion summaries	
12:15 – 1:30	**Working lunch** Second workgroup session – Review and revise discussion summaries	
1:30 – 2:30	Third workgroup session – Review and revise discussion summaries	
2:30 – 2:45	**Break**	
2:45 – 4:15	Group discussion – discussion summaries	Brock Bernstein
4:15 – 4:30	Wrap up and adjourn	Brock Bernstein

Process for Technical Teams

The following workshop process is intended to increase the amount of direct interaction among participants, accelerate the refinement of ideas and products through multiple rounds of review and revision, and ensure that participants have the opportunity to address all topics.

- Break into four pre-assigned technical teams of equal size.
- Designate a team leader and reporter for each team (already done).
- Assign each team (and each reporter) one of the four workshop questions.
- The reporters are paired with the questions and will rotate among the four teams (see figure below). This builds momentum toward enriching the answer to each question, and provides continuity as each question is cycled from team to team.
- Team leaders are charged with keeping their team focused on the task at hand, bringing the best work out of each individual, synthesizing ideas to make conceptual breakthroughs, and ensuring ideas are accurately captured and conveyed to the reporter.
- **First session:** Each team responds to the assigned question.
- Reporters and questions rotate to the next team.
- **Second session:** Reporters brief their new team on the progress made by the previous team toward answering the assigned question. Each team critiques and revises the previous team's product.
- Reporters and questions rotate again.
- **Third session:** Repeat the briefing, critique, and revision of the previous group's product.
- **Group Discussion:** The workshop facilitator will reconvene all the workshop participants. Reporters and team leaders will: (i) describe how the answer(s) to each question evolved as they moved from team to team; and (ii) summarize the key points catalyzed during the collaborative process.



BIOLOGICAL INDICATOR METRIC

FISH, SHELLFISH, AND OTHER ORGANISMS	

FOOD PRODUCTION	

PRODUCTIVITY OF THE PHOTIC ZONE	

ECOSYSTEM PROCESSES	

CONTAMINANTS	

SITE SPECIFIC STRESSORS	

S A M P L E BIOLOGICAL INDICATOR S A M P L E METRIC

RESPONSE OF FISH STUDIED AT "X2" WORKSHOPS	

Neomysis mercedis	Metric TBD
Crangon franciscorum	Metric TBD
Molluscs	Metric TBD
Striped bass	Metric TBD
Starry flounder	Metric TBD
Longfin smelt	Metric TBD

FOOD PRODUCTION	
Area of Low Salinity Zone	Hectares
Volume of Low Salinity Zone	Cubic Meters
Time LSZ Spends in Proximity to Productive Habitat	Minutes

PRODUCTIVITY OF THE PHOTIC ZONE	
Depth of Penetration by Sunlight through Water Surface	Centimeters
Turbidity	Nephelometric Turbidity Unit (NTU)

ECOSYSTEM PROCESSES	
Diversity of Aquatic Habitat at Four Cross Sections	Numerical Index TBD for Habitat Structure for Fish, e.g., # of feeding spots, # of hiding spots.
Diversity of Flow Patterns at Four Cross Sections	Metric TBD
Interfaces of Currents with Accumulations of Food	Metric TBD

CONTAMINANTS	
Ammonium	Inhibit diatoms/promote microcystis ($\mu mol\ L^{-1}$)[2]
Selenium	Biological capture by overbite clams ($\mu g\ L^{-1}$)[3]

SITE SPECIFIC STRESSORS	
Time LSZ Spends in Proximity to Outfalls	Minutes
Time LSZ Spends in Proximity to Pumps	Minutes
Time LSZ Spends in Proximity to *Egeria* Beds	Minutes
Time LSZ Spends in Proximity to Deep Channels	Minutes
Time LSZ Spends in Proximity to Power Plants	Minutes
Time LSZ Spends in Proximity to CVP/SWP Effects	Minutes

[2] See Dugdale's model
[3] See models by Luoma & Presser (fate of Se) and by Jan Thompson (clam abundance)